

## Understanding the Discriminant

Date\_\_\_\_\_ Period\_\_\_\_

**Find the value of the discriminant of each quadratic equation.**

1)  $6p^2 - 2p - 3 = 0$

2)  $-2x^2 - x - 1 = 0$

3)  $-4m^2 - 4m + 5 = 0$

4)  $5b^2 + b - 2 = 0$

5)  $r^2 + 5r + 2 = 0$

6)  $2p^2 + 5p - 4 = 0$

**Find the discriminant of each quadratic equation then state the number of real and imaginary solutions.**

7)  $9n^2 - 3n - 8 = -10$

8)  $-2x^2 - 8x - 14 = -6$

9)  $9m^2 + 6m + 6 = 5$

10)  $4a^2 = 8a - 4$

11)  $-9b^2 = -8b + 8$

12)  $-x^2 - 9 = 6x$

$$13) -4r^2 - 4r = 6$$

$$14) 8b^2 - 6b + 3 = 5b^2$$

**Find the discriminant then state the number of rational, irrational, and imaginary solutions.**

$$15) -6x^2 - 6 = -7x - 9$$

$$16) 4k^2 + 5k + 4 = -3k$$

$$17) -7n^2 + 16n = 8n$$

$$18) 2x^2 = 10x + 5$$

$$19) -10n^2 - 3n - 9 = -2n$$

$$20) -9r^2 - 8r - 1 = r - r^2 - 9$$

$$21) -3p^2 + 10p + 5 = -8p^2$$

$$22) m^2 + 5m = 2m^2$$

**Critical thinking questions:**

23) Write a quadratic equation that has two imaginary solutions.

24) In your own words explain why a quadratic equation can't have one imaginary solution.